AMSAT SATELLITE REPORT

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Phase IIIB Update (von Deutschland)

Dr. Karl Meinzer, DJ4ZC, AMSAT DL President, was in Washington for the meeting of the Phase III Controllers 11-12 April. Karl reports the following Phase IIIB progress at the AMSAT DL Marburg headquarters in a note to *ASR*:

"1) At the Technical University Berlin the antenna range has been rigged up for our measurements and Frank Eckert, DL7XC, has started Phase III antenna measurements.

2) Wolfgang Schafer, DK5GB, reports that he has completed the input-filter for the L-band-transponder. From these measurements a noise figure of 3 dB now seems feasible for the L-transponder.

3) All crystal filter manufacturers asked to supply an 800 kHz-wide filter at 53 MHz have given up the effort at the outset of this task. However, W. Schafer, in a few midnight sessions, has come up with a prototype conventional filter for 10.7 MHz. This filter looks so good that it has been selected for the flight transponder.

4) In the development of the new wideband transponder technology dubbed HELAPS,[1] a few significant milestones have been achieved. The crew consisting of Ulrich Muller, DK4VW, Werner Haas and myself has checked the phase and amplitude modulating arrangement and found that it works perfectly. Measurements have now started on a full power 50 watt output transmitter working on 2 meters. Results are so encouraging that serious consideration is being given to converting the U-transponder too to HELAPS instead of the planned Doherty technique.

5) Subsequent to the loss of Phase IIIA on the ill-fated LO2 last May 23, a redevelopment of the AFDEM[2] to cope with certain operational inadequacies was begun. This work has now been completed and the new AFDEM will be presented during the operations group meeting 11 April. The new board solves all the known problems and permits the complete automation of the ground station."

As may be deduced from Karl's note, our partners in the Phase III program are proceeding "full speed ahead" on several fronts. It should not go unnoticed that much of the work at Marburg is "state of the art" commanding the interest of the professional community as well as the amateur radio community. Thanks to DJ4ZC and Alex, DC7AS, for their informative reports.

Footnotes

1. HELAPS: High Efficiency Linear Amplification by Parametric Synthesis. (See *ASR* #4)
2. AFDEM: Audio Frequency DEModulator; used for interfacing the audio output of the RF receiver to the computer to monitor the Engineering Beacon; a device comparable to the IFDEM (See *ORBIT* #5.)

New Area Coordinators

AMSAT's drive to rejuvinate the Area Coordinator team is beginning to show results. Rich Zwirko, K1HTV, AMSAT's Vice President for Operations recently announced the following three appointments. New Area Coordinator for Alberta is Gordon Reid, VE6AK. Appointed to the Kentucky slot is AB4Y, Charles Martin. At the new Central Massachusetts helm is WA1ZUB, Jim Buckley, with Western Massachusetts assigned to W1KK, Art Zavarella. Congratulations and thanks to the new volunteers from *ASR* and AMSAT!

K1HTV also announced that an appointment to Eastern Massachusetts is pending confirmation but that additional coordinators are still needed in AL, AK, AZ, DE, MD, NM, SC, Ontario and Manitoba. Interested parties should contact K1HTV at AMSAT HQ, P.O. Box 27, Washington, D.C., 20044.

B.O.D. Agenda

The Board of Directors Meeting held this past weekend, 17-19 April at the Goddard Space Flight Center, Greenbelt, Maryland, covered an enormous range of topics from finances, contests/awards and publications to a comprehensive review of the on-going satellite construction projects including Phase IIIB & C, UoSAT and SYNCART. *ASR* #6 will detail the major results of the B.o.D. deliberations.

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"Motorvation"

The liquid fuel kick motor option discussed in *ASR* #4, April 6, 1981, is again in the news. AMSAT DL has received the assurances of the West German manufacturer that the motor will be made available to AMSAT. Coincidentally, news from W3GEY is that we have obtained a solid fuel kick motor donation as well. AMSAT officials were obviously delighted at this turn of events because of all the satellite sub-systems aboard Phase III, the kick motor was least likely to be fabricated in-house. As it stands, it is a bolt-on sub-system on which the entire mission critically depends.

Does the sudden confluence of kick-motors itself cause a problem for AMSAT? Assuming that the required plumbing can be obtained for the liquid motor, the availability of one of each breed (liquid vs solid) meshes rather well with other long-term planning scenarios. For example, as is well-known, Phase IIIB is due to be launched mid-82 from the European Space Agency's Kourou, French Guiana facility by an Ariane rocket. Since the primary mission of the Ariane calls for insertion of the payload into an orbit inclined 7° to the equator, AMSAT will need more kick motor energy on Phase IIIB than would have been needed on Phase IIIA. That is because the transfer ellipse on Ariane LO2 which carried Phase IIIA was designed for 17° inclination. From the transfer ellipse of 7° or 17°, AMSAT would very much like to attain an inclination in the 60 to 63° range. (See *ASR* #4 for the underpinning rationale). Thus, since more energy is needed for Phase IIIB to go from 7° to 60°+, it is fortuitous to have the liquid option.

On the other hand, substantially less is known about Phase IIIC and its "ride". AMSAT is presently diligently working to secure a ride for Phase IIIC. With a renewed interest in the United States in continuing the larger launch vehicles well into the 80's, the possibility of obtaining a U.S. ride is somewhat brighter than, say, a year or two ago. In the case of a U.S. launch, however, the solid fuel motor will do quite nicely since the transfer ellipse of a typical heavyweight U.S. launch has a higher inclination. That means less energy must be carried aboard Phase IIIC to attain a usable orbit. And that means the solid fuel rocket is quite satisfactory.

If you imagine AMSAT's future project planning as a score card or the like, with a number of boxes to be checked-off before the mission can be accomplished, then the score cards for both Phase IIIB and IIIC have several very important boxes checked-off (albeit in pencil for the moment).

Annual Meeting Set

President W3IWI has announced that the Annual Meeting will be held at the Goddard Employees' Recreation Center, Goddard Space Flight Center, Greenbelt, Maryland on October 17, 1981. All AMSAT members and guests are cordially invited to attend. The Election ballot count for the Board of Directors and the President's annual report are among the important agenda items. The previously announced tentative date of 13 Sept. 81 proved impossible because the Goddard facility was booked for that date. The October 17 date is now firmly booked according to W3IWI.

HF Net Experiment

AMSAT's Sunday HF International nets on 20 and 15 meters and the 75 meter Tuesday evening sessions have been in operation for a number of years more or less on the same frequencies. (14282, 21280 and 3850; the 20m frequency was recently adjusted upwards from 14280 to accommodate many Europeans who were troubled by the second harmonic of Radio Moscow on 7140 kHz).

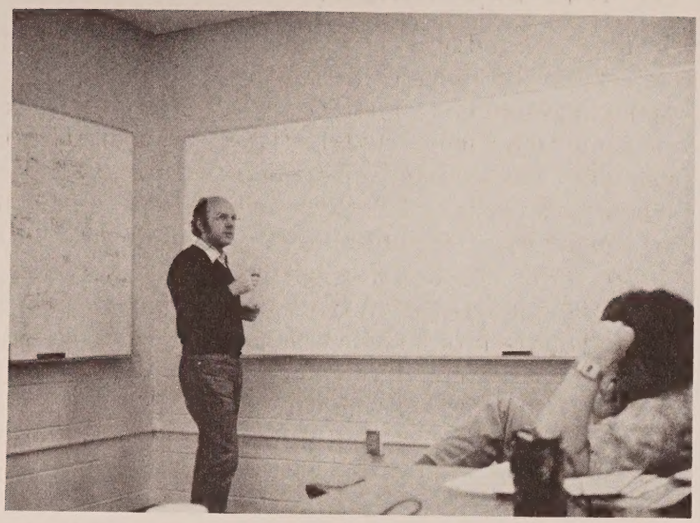
A recurring question among some U.S. amateurs concerns the selection of two of the frequencies which, since the advent of incentive licensing in the U.S., have been exclusive domain of Advanced Class (and higher) licensees. The U.S. licensing structure and concomitant privilege allotments effectively preclude General Class Licensees from joining in on the activities on 3850 and 21280. Why should this be? Is this selection of frequencies designed to promote the so-called "elitist" image? Or is there another explanation which accounts for the nets' residence in the unreachable (for some) portions of the band?

Despite the desire of a very few to discern conspiracy and "ne'er do'well-ism" in Washington, the historical perspective may shed some light. AMSAT took up residence on those same three frequencies as a practical, only *partially* successful, solution to a problem that persists today worse than ever: crowding on the HF bands. By comparison to today, the ranges 3800-3900 and 21270 to 21350 were relatively less densely populated then. As all the surveys and census of amateurs indicate, the upward migration in license class is clear and steady. Thus a larger proportion of hams now appear in the ranges 3800-3900 and 21270-21350 and the advantage that existed in operating the nets in these sub-bands five or eight years ago is somewhat mitigated. So what might seem to the relative newcomer holding a General Class ticket as evident snobbery today, had a practical purpose when initiated some years ago.

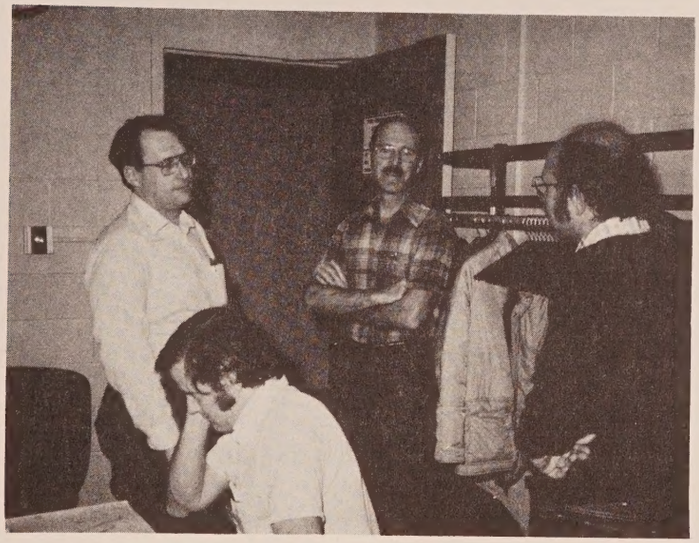
Should we change now?

The question has occurred to a number of us. But since the net frequencies are now so thoroughly entrenched in members' memory's, does it not seem foolish to change now? And what about those who would like to see the times of the nets arranged to suit their own particular situation? What can be done for them? And what affect will nets on Phase IIIB have on HF nets?

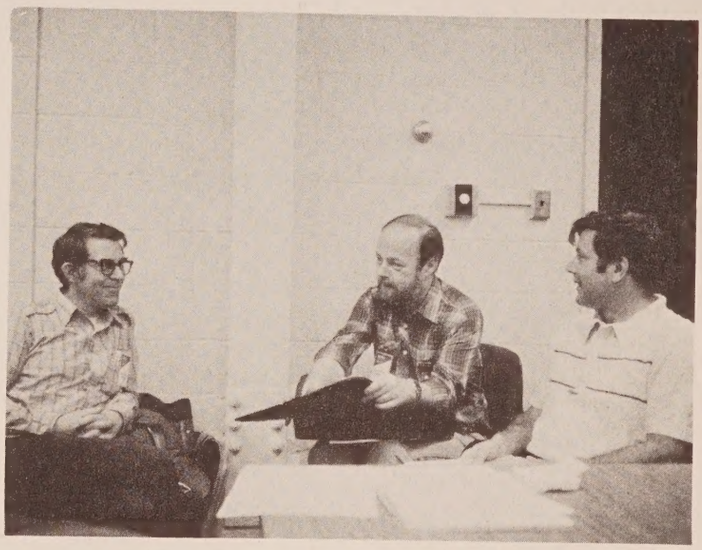
The answer is, for now, that there is no answer. The information on which to base a rational decision does not exist. For example, we do not know how many "Generals" sit out there week after week burning to key the xmtr and simply say, "AMSAT Net Control, this is W4ZZZ checking in!" We simply do not know, also, if it is *important* for W4ZZZ to announce his presence if he neither has traffic nor ever is the receiver of traffic. In sum, lack of evidence is not negative evidence. So for the next few weeks, as occasion allows, the net control station will listen for check-ins in the General portion of the band in order to determine the extent of the "untabulated" now reduced to "listen-only" except for the 20 meter net. We hope to demonstrate to the membership that the choice of frequency is a matter of practicality rather than snobbery. Your comments are welcome.—*WA2LQQ*



Detailing the function of the Meinzer Phase IIIA low-pass filter, DJ4ZC here describes how the integrated circuit version "goes down to DC in chips", left, while an attentive group, right, looks on. Pictured in the group are, foreground, W3IWI. Background, left to right, WDØEEL, W3GEY, W2FPY, ZL1AOX, K1HTV, W6PAJ, W1HDX and VE1SAT.

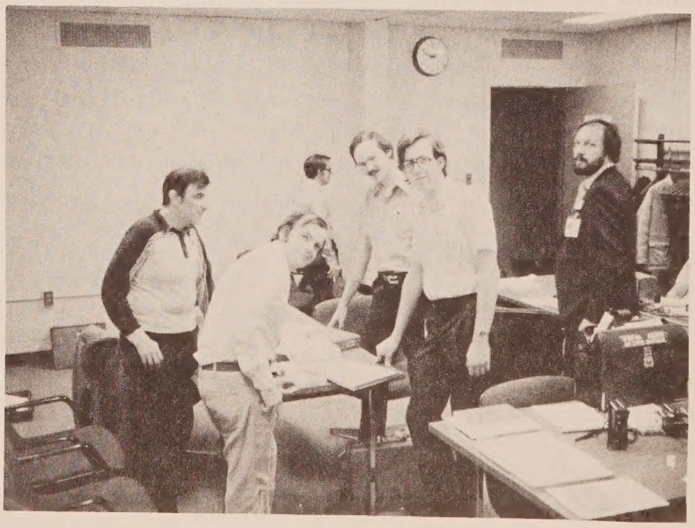


Seated, ZS1FE, checks over Phase IIIB documentation while, left to right, W3IWI, W4PUJ and DJ4ZC discuss a point of interest.



Reviewing a package of Phase IIIB IPS software are, left to right, WØLER, WØPN and ZL1AOX.

The Phase IIIB Controller Team en masse together with the R & D nucleus. Front row, left to right, ZL1AOX, W4PUJ, W3IWI, K2UBC, W2FPY and DJ4ZC. Rear, left to right, WØPN, W6PAJ, ZS1FE, WØLER, W3GEY, K1HTV, KA9Q, WDØEEL and W1HDX.



Inspecting the Phase IIIB documentation package produced by AMSAT DL are, left to right, W2FPY, K2UBC, K1HTV, KA9Q and W6PAJ. WØLER is seen in the background.

Fund Raising Success

AMSAT's callsign badge donation campaign was moving along briskly in early April. With donations under this campaign now exceeding the $1,000 mark, AMSAT officials cited the work of Jack Somers, WA6VGS, as instrumental in launching the badge campaign. Thanks were also extended to K6MFJ, Wendell Rice, who manufactures the badges for AMSAT.

Meanwhile, AMSAT President Tom Clark, W3IWI, prepared to launch the AMSAT T-Shirt campaign at the Dayton Hamvention 24-26 Apr. The T-shirts, developed under the direction of Vice President Bill Brown, K9LF, feature a "Hams in Space" theme portraying amateurs of various lands engaged in satellite-related activity. The humorous caricatures are designed to amuse and delight the eye say the designers.

On the near-horizon are several other campaigns designed to help finance the Phase III program. The Official AMSAT QSL card is very near to production. And a major campaign involving the marketing genius of Joe Sugarman, W9IQO, President of world-famous JS&A (who brought you such marketing coups as the "Bone Phone") is to be announced in *ORBIT* #6, says W3IWI.

ORBIT *Classified?*

Discussions are now underway between *ORBIT* Magazine Editor G3ZCZ, Managing Editor W1XT and President W3IWI regarding the possibility of including a classified "Ham Ads" section in *ORBIT*. W1XT pointed out that in his experience the ad pages could be expected to, at best, pay for the space they consume. The suggestion has been taken under advisement and will be discussed further. AMSAT management is interested in knowing what the membership feels about the inclusion of the ads in *ORBIT*. Would it serve a useful purpose for the satellite community to have a place to advertise for sale or swap some of the exotica/paraphernalia associated with our special interests?

New/Interesting DX

LX1SI is reported active again on Mode B ssb. Conditions for the past several weeks have been only fair with a number of Auroral disturbances noted especially well-north. (Tks G3IOR)

Hawaiian Satellite Activity

Rick Dittmer, WH6AMX, in a special message to U.S. mainland satellite operators, says that he is among three very active AO-7/8 users on the islands. Rick is especially interested in assisting central U.S. and Canada amateurs complete their Satellite W.A.S. WH6AMX is active on all three modes (A, B, J). The two others in Rick's message were KH6IBA (A/B) and AH6AP (A/J). The Hawaiians can access AO-7 on ascending nodes from 115° to 185° West and on descending nodes from 297° to 007° West. On AO-8, KH6 can access on ascending nodes from 125° to 177° and on descending nodes from 305° to 360°. Good luck to those chasing W.A.S. and thanks to WH6AMX for letting the mainlanders know about his colleagues and himself. Thanks to W6CG for the QSP.

Shuttle Sparks Space Interest

As much of the civilized world watched, the U.S. Space Shuttle launched a new era in space travel early on April 12th. The level of interest in the general public as well as the Amateur Radio community is reflected in a number of ways. Each seems to indicate a growing awareness of Space Science as symbolized by the Columbia.

For example ARRL's W9KDR reports a sharp increase in the number of space-related inquiries directed at the League in recent weeks with special emphasis on utilizing the shuttle in furtherance of the Amateur Satellite Service. A second example is the large number of QSOs logged by the Shuttle Special Events Stations WB4ICJ, WA3NAN, K6OX and WA4NZD (see *ASR* #4). WA3NAN logged nearly 2000 QSOs by Monday and K6OX at the recovery site (Edwards AFB) had 3300 by Tuesday morning at recovery time.

From around the world came reports. ZS1BI reported visual acquisition of Columbia on Sunday evening (Capetown time) and reported it appeared about magnitude 1. That's about as bright as the brightest stars seen from the surface. W4BE also reported seeing Columbia with the unaided eye. Still others reported hearing Columbia on the VHF frequency of 296.8 MHz.

At both ends of the 54½ hour mission, AMSAT individuals watched with the interest of those keenly aware of the significance of the event. At Goddard to watch the launch on the special NASA video circuit were W6PAJ, KA9Q, W2FPY, WDØEEL, K1HTV, G3ZCZ, W3IWI and ZL1AOX. Several of these AMSAT folks were in town especially for the Phase III Controllers meeting (see photos on page 3) but of course took time out to watch the launch.

On the recovery end of the enormously successful mission K6PGX, AMSAT's notorious shutterbug, was poised at Roger's Dry Lake and reports the landing was even more impressive to behold in person. W6SP had hoped to be among the throng at Edwards AFB but the delay in the launch from Friday to Sunday provided an inescapable schedule conflict for Tuesday's recovery.

AMSAT officials were pleasantly surprised by both the depth and breadth of the public's renewed interest in Space Sciences. President Tom Clark, W3IWI, summed the reaction of the officials with confidence that the interest pendulum's return to the level of the mid-sixties could only bode well for AMSAT since AMSAT's emphasis is clearly on the application of Amateur Radio to space-related activities.

PR Brochure

The AMSAT Public Relations brochure, "What is AMSAT" has recently been revised and republished in a new, brighter format. The four-page document features a synopsis of the four satellite construction activities now in progress (Phase IIIB and C, UoSAT and SYNCART) and a brief history of AMSAT citing the organization's role in AO-5, 6, 7 and 8. The brochure is concluded with a reprint of G3ZCZ's excellent Editorial originally appearing in Jan./Feb. 81 *ORBIT*. Copies of the brochure are available from AMSAT's Office Manager, Martha.